WHAT IS CLAIMED IS:

1. An internal combustion engine comprising:

an air pump that supplies secondary air to an upstream side of an exhaust gas control catalyst in an exhaust pipe via a secondary air supply passage;

an adjusting device that adjusts an intake air amount delivered into a combustion chamber from an intake pipe; and

a controller that performs control for increase correction of the intake air amount adjusted by the adjusting device when the air pump performs an operation of supplying the secondary air.

2. The internal combustion engine according to claim 1, wherein

the controller performs control for the increase correction of the intake air amount adjusted by the adjusting device when the air pump performs the operation of supplying the secondary air during idling immediately after the internal combustion engine is started.

3. The internal combustion engine according to claim 1, wherein the controller performs control for the increase correction of the intake air amount adjusted by the adjusting device when the air pump performs the operation of supplying the secondary air while the internal combustion engine is warmed-up.

4. An internal combustion engine for a vehicle, comprising:

an air pump that supplies secondary air to an upstream side of an exhaust gas control catalyst in an exhaust pipe via a secondary air supply passage;

an adjusting device that adjusts an intake air amount delivered into a combustion chamber from an intake pipe;

a vehicle speed detector which detects a vehicle speed; and

a controller that performs control for increase correction of the intake air amount adjusted by the adjusting device when the air pump performs an operation of supplying the secondary air, and that derives an increase correction amount for the increase correction in a case where the vehicle speed detected by the vehicle speed detector is 0 using a first process, and derives an increase correction amount for the

increase correction in a case where the vehicle speed detected by the vehicle speed detector is not 0 using a second process that is different from the first process.

5. The internal combustion engine for a vehicle according to claim 4, wherein the controller makes setting such that the increase correction amount derived using a process which is used in a case where the vehicle speed is not 0 becomes larger than the increase correction amount derived using a process which is used in a case where the vehicle speed is 0 when the same data is input to each of the processes.

6. A control apparatus for an internal combustion engine for a vehicle, comprising:

an adjusting device that adjusts an intake air amount delivered into a combustion chamber from an intake pipe;

a recognizing device that recognizes whether or not secondary air is to be supplied;

a vehicle speed detector that detects a vehicle speed; and

a controller that derives an increase correction amount for increasing the intake air amount delivered into the combustion chamber from the intake pipe using a first process when the recognizing device recognizes that the secondary air is to be supplied and the vehicle speed detector detects that the vehicle speed is 0, and derives an increase correction amount for increasing the intake air amount using a second process which is different from the first process when the recognizing device recognizes that the secondary air is to be supplied and the vehicle speed detector detects that the vehicle speed is not 0, and that gives instruction to the adjusting device such that the intake air amount is increased by the derived increase correction amount.

7. The control apparatus for an internal combustion engine for a vehicle according to claim 6, wherein the controller makes setting such that the increase correction amount derived using a process which is used in a case where the vehicle speed is not 0 becomes larger than the increase correction amount derived using a process which is used in a case where the vehicle speed is 0 when the same data is input to each of the processes.

8. A control method for an internal combustion engine which includes an air pump that supplies secondary air to an upstream side of an exhaust gas control catalyst in an exhaust pipe via a secondary air supply passage, and an adjusting device that adjusts an intake air amount delivered into a combustion chamber from an intake pipe, comprising the step of:

performing increase correction of the intake air amount adjusted by the adjusting device when the air pump performs an operation of supplying the secondary air.

9. The control method according to claim 8, wherein control for the increase correction of the intake air amount adjusted by the adjusting device is performed when the air pump performs the operation of supplying the secondary air during idling immediately after the internal combustion engine is started.

10. The control method according to claim 8, wherein control for the increase correction of the intake air amount adjusted by the adjusting device is performed when the air pump performs the operation of supplying the secondary air while the internal combustion engine is warmed-up.

11. A control method for an internal combustion engine for a vehicle, comprising the steps of:

deriving an increase correction amount for increasing an intake air amount in a case where a vehicle speed is 0 using a first process, and deriving an increase correction amount for increasing the intake air amount in a case where the vehicle speed is not 0 using a second process that is different from the first process when secondary air is supplied; and

performing control so as to deliver air into a combustion chamber such that the intake air amount is increased by the derived increase correction amount.

12. The control method according to claim 8, wherein setting is made such that a second increase correction amount derived using a second process which is used in a case where a vehicle speed is not 0 becomes larger than a first increase correction amount derived using a first process which is used in a case where the vehicle speed is 0 when the same data is input to each of the processes.